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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/614,260	07/08/2003	Chi-Kong Tse	120167-166799	5968
60172 7590 01/14/2009 SCHWABE, WILLIAMSON & WYATT, P.C. 1420 FIFTH, SUITE 3010 SEATTLE, WA 98101				
EXAMINER				
POLTORAK, PIOTR				
ART UNIT		PAPER NUMBER		
2434				
MAIL DATE		DELIVERY MODE		
01/14/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/614,260

**Applicant(s)**

TSE ET AL.

**Examiner**

PETER POLTORAK

**Art Unit**

2434

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11/03/08.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 3-8, 11-13, 15-18, 20-30 and 32-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3-8, 11-13, 15-18, 20-30 and 32-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. Applicant's amendment received on 11/03/08 has been entered.
2. In light of amendments the claim objections cited in the previous Office Action are withdrawn.

### ***Response to Amendment***

3. Applicant indication that the double-patenting objection will be addressed upon the present and co-pending application is settled has been acknowledged.  
  
Also, it is noted that the previous Office Action contained a typographical error identifying the copending application that was a base to a double-patent rejection as the application No. 10/614260. However, this number is the number identifying the instant application and the number of the conflicting application should read: 10/840601.
4. In light of applicant's arguments 35 USC § 101 rejection is withdrawn.
5. *As per claim 1, 3, 6, 12, 18 and 20 applicant argues that Kisel fails to teach a  $k^{\text{th}}$ -chaotic signal generator having chaotic characteristic value associating with a chaotic algorithm.*  
  
Applicant's augment has been carefully considered but not found persuasive. As shown in Fig. 7 (and associated text. In particular, see the structure presented on/in the left side of the Fig. 7) Kisel clearly teaches a  $k^{\text{th}}$ -chaotic signal generator having chaotic characteristic value associating with a chaotic algorithm.
6. *Additionally applicant argues that Kisel teaches a demodulation technique using two ML decoders rather than one.*

Applicant's argument is not persuasive. First, the claim language does not prohibit of having more than one demodulator. Secondly an ordinary artisan would readily recognize that, in the broadest reasonable interpretation, each element VD as well as a set of elements VD, which Kisel's receiver uses to facilitate demodulation, could be considered to be a demodulator, as cited in the claim language.

7. *Furthermore, applicant argues that unlike applicant's embodiment matching the evaluated chaotic characteristic value with the chaotic characteristic value stored in the receiver, Kisel makes a decision by comparing the two likelihood measures.*

The examiner points out that not only Kisel discloses matching the evaluated chaotic characteristic value with the chaotic characteristic value but also, in the broadest reasonable interpretation, the calculated value disclosed by Kisel must be stored (e.g. in memory of a receiver) in order to be operated on and, as a result, it could also read on the chaotic characteristic value (see CSK Modulation-Demodulation, in particular system implementing only one map).

8. *Applicant argues that while Kisel teaches that only one chaotic generator is needed for a binary ( $M=2$ ) system, two chaotic generators are utilized to transmit binary ( $M=2$ ) information.*

The examiner was not able to identify applicant arguments supporting the notion argued by applicant thus it is unable to address applicant's concerns. Also, it appears that applicant contradicts his/hers interpretation of Kisel's teaching, as illustrated in Fig. 9 (and associated text) for example. Specifically, on one hand applicant observes that (in applicant's interpretation) Kisel discloses two

demodulators rather than one but then applicant changes the interpretation and view Kisel's invention as disclosing only one generator. Lastly, it is noted that the claim language does not put any restrictions on M value and, especially, that in binary system M must equal 2. In other words it appears that applicant may have some preconceived notion of what M "should" represent; the notion that is not articulated by the claim language.

9. As per claims 8, 13, 18, 25 and 30, applicant appears to argue that neither Kisel nor Umeno and Menezes teach the claim language. However, applicant merely repeats the limitation and does not provide any concrete arguments supporting the allegation. As a result, the arguments are not found persuasive.

10. Claims 1, 3-8, 11-13, 15-18, 20-30 and 32-34 have been examined.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office Action.

### ***Double Patenting***

Claims 1, 3-8, 11-13, 15-18, 20-30 and 32-34 remain provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-29 of copending application No. 10/840601. See details in the previous Office Action.

### ***Claim Rejections - 35 USC § 102***

11. Claims 1, 3, 18 and 20 remain rejected under 35 U.S.C. 102(b) based as being anticipated by IEEE (Andrey Kisel, Herve Dedieu and Thomas Schimming, "Maximum Likelihood Approaches for Noncoherent Communications with Chaotic Carriers", IEEE Transactions on Circuits and Systems – I: Fundamental Theory and Applications, Vol. 48, No. 5, May 2001).

As per claims 1 and 18, IEEE discloses a method for transmitting and receiving a digital message having N digits, each of the N digits having any one of M values in a system, wherein each of the M values k corresponds with a kth-chaotic signal generator having chaotic characteristic value associating with a chaotic algorithm and is transmitted within a bit period including the steps of selecting the corresponding kth-chaotic signal generator, generating a chaotic signal by the corresponding kth-chaotic signal generator and transmitting the chaotic signal ( see modulation in Fig. 7 and associated text, for example. Note that although for purpose of simplicity the examiner discusses CSK model disclosed in Fig. 7, Fig. 9 and differential chaos shift keying DCSK, which is a variation of the CSK model also applies to claimed limitations), receiving the chaotic signal at a receiver storing the chaotic characteristic values of all chaotic signal generators used to transmit the message (demodulation in Fig. 7 and 8 and associated text, for example). IEEE discloses that the demodulation of the chaotic signal evaluating the chaotic characteristic value of the received chaotic signal, matching the evaluated chaotic characteristic value of the received chaotic signal with the chaotic characteristic values stored in the receiver and assigning the transmitted value k by reference to

the closest match between the evaluated chaotic characteristic value and the stored chaotic characteristics values (IEEE, pg. 539, for example).

12. As per claims 3, 20, the chaotic signal produced by chaotic generators disclosed by IEEE inherently includes a series of numbers. Each number is transmitted within the bit period (see Fig. 7 and associated text, for example), and on pg. 538 (and 539) IEEE discloses generators using algorithms.

***Claim Rejections - 35 USC § 102 or 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 6 and 23 remain rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over IEEE (Andrey Kisel, Herve Dedieu and Thomas Schimming, "Maximum Likelihood Approaches for Noncoherent Communications with Chaotic Carriers", IEEE Transactions on Circuits and Systems – I: Fundamental Theory and Applications, Vol. 48, No. 5, May 2001). IEEE discloses a method for transmitting and receiving a digital message having N digits, each of said N digits having any one of M values as discussed above.
14. Although IEEE does not explicitly disclose M equal to 2 with each digit having a value of either 0 or 1, the limitation, if not inherent, is at least implicit. M equal to 2 in IEEE's invention and computers operate on binary values: 0s and 1s. Thus, in order

to represent these two values in a computer system, it would have been implicit, if not inherent to utilize these two different values: 0 and 1.

15. Claims 7 and 24 are rejected under 35 U.S.C. 103(a) as obvious over IEEE (Andrey Kisel, Herve Dedieu and Thomas Schimming, "Maximum Likelihood Approaches for Noncoherent Communications with Chaotic Carriers", IEEE Transactions on Circuits and Systems – I: Fundamental Theory and Applications, Vol. 48, No. 5, May 2001). IEEE teaches modulation and demodulation performing the steps discussed above.
16. Although, IEEE does not teach that the chaotic algorithm utilizing the steps is  $y=m[0.5-2|x|]$ , an ordinary artisan would readily recognize that a particulars of the algorithm would not affect the functionality of the claimed method. Furthermore, it would have been obvious to an ordinary artisan to try different algorithms given the benefit of finding the most efficient operation of the system.
17. Claims 4-5, 8, 11-13, 15-17, 21-22, 25 and 28-30, 32-34 are rejected under 35 U.S.C. 103(a) as obvious over IEEE (Andrey Kisel, Herve Dedieu and Thomas Schimming, "Maximum Likelihood Approaches for Noncoherent Communications with Chaotic Carriers", IEEE Transactions on Circuits and Systems – I: Fundamental Theory and Applications, Vol. 48, No. 5, May 2001) in view of Umeno (USPN 6661831) and Menezes et al. (Alfred J. Menezes, Paul C. van Oorschot, Scott A. Vanstone, "Handbook of applied cryptography", 1997, ISBN: 0849385237). IEEE teaches generating the chaotic signal as discussed above.
18. Additionally, as per claims 5, 32 and 34, IEEE discloses repeating the step of pairing the first two numbers of the chaotic signal received by the receiver to form a first plot



on a two-dimensional plane and matching the evaluated chaotic value of the return map with the stored chaotic values (Fig. 8 and 10 and associated text, for example).

19. As per claims 4, 8, 13, 21, 25 and 30, IEEE does not explicitly disclose inputting a random number to the chaotic algorithm to generate a first chaotic number. Umeno discloses inputting a random number to generate a first chaotic number (Umeno, col. 5 lines 64-67). It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to input a random number to generate a first chaotic number in IEEE's invention given the benefit of increased security.
20. IEEE in view of Umeno does not disclose inputting the first chaotic number to the chaotic algorithm to generate a second chaotic number and repeating the step of using the second chaotic number as the first chaotic number until all number to be transmitted within the bit period are generated. However, the examiner points out that this technique (generating a second chaotic number and repeating the step of using the second chaotic number as a first chaotic number until all numbers to be transmitted are generated) is old, well known and frequently used in the art of computer security (see Menezes, pg. 229, Fig. 7.1 d, for example). It would have been obvious to an ordinary artisan to generate a second chaotic number and repeating the step of using the second chaotic number as the first chaotic number until all number to be transmitted within the bit period are generated given the benefit of efficient mechanism or additional ambiguity.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter Poltorak whose telephone number is (571) 272-3840. The examiner can normally be reached Monday through Thursday from 9:00 a.m. to 4:00 p.m. and alternate Fridays from 9:00 a.m. to 3:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kambiz Zand can be reached on (571) 272-3811. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Peter Poltorak/

Examiner, Art Unit 2434

/Kambiz Zand/

Supervisory Patent Examiner, Art Unit 2434